Claim Listing

1–10. (canceled)

11. (currently amended) A method of coating a paper/board web of a selected width with a plane-fed curtain coater, comprising the steps of:

feeding a plurality of layers ~~at least one layer~~ of [[a]] coating material onto a flow plane, wherein each of the plurality of layers extends in a cross machine direction and is fed from ~~at least one~~ a feed chamber and each layer is fed onto the flow plane through a corresponding nozzle feed slot, the ~~onto a~~ flow plane being established by a cross machine direction extending nozzle beam so that the plurality of layers form a plurality of superpositioned layers;

flowing the ~~at least one layer~~ plurality of superpositioned layers of coating material in a machine direction along the flow plane to a feed lip;

trickling the plurality of superpositioned layers from the feeding lip of the nozzle beam in the form of a coating curtain onto the surface of the web;

determining a cross machine direction thickness profile downstream of [the]] each nozzle feed slot of each of said plurality of layers ~~at least one~~ of coating material ~~layer~~ on top of the flow plane; and

manipulating a coating material feed rate for the coating material layers on the basis of each of the cross machine direction thickness profiles and regulating thereby each layer cross-profile and thickness by modifying an effective area of a flow channel at each of a multiple of points in the cross direction between the corresponding feed chamber and feed slot ~~controlling on the basis of the cross machine direction thickness profile, a feed rate of the coating material from the feed chamber to the feed slot to achieve a selected cross machine direction thickness profile for said at least one coating material layer~~.

12. (canceled)

13. (currently amended) The method of claim 11 wherein the step of manipulating a coating material feed rate ~~controlling~~ on the basis of each of the cross machine direction thickness profiles, further comprises increasing or decreasing a by-pass flow of the coating material through [[the]] each feed chamber.

14. (currently amended) The method of claim 11, wherein the step of determining the cross machine direction thickness profile of each of said plurality of layers is accomplished with at least one sensor making a non-contact measurements of thickness.

15. (currently amended) The method of claim 14, wherein said at least one sensor is moved in a cross machine direction along the nozzle beam, such that the cross machine direction thickness profile is ~~conductible~~ conducted with said sensor essentially across the flow plane corresponding to the entire width of the web.

16. (currently amended) The method of claim 11, wherein the step of determining the cross machine direction thickness profile of each of said plurality of layers of coating material is accomplished by measuring a surface speed of ~~the at least one~~ each layer of coating material as it flows in the machine direction along the flow plane.

17. (currently amended) The method of claim 11, wherein the step of manipulating a coating material feed rate for the coating material layers on the basis of each of the cross machine direction thickness profiles and regulating thereby each layer cross-profile and thickness by modifying an effective area of a flow channel at each of a multiple of points in the cross direction between the corresponding feed chamber and feed slot ~~controlling on the basis of the cross machine direction thickness profile, the feed rate of the coating material from the feed chamber to the feed slot to achieve a selected cross machine direction thickness profile for said at least one coating material layer,~~ further comprises:

manipulating an element disposed in each of a plurality of cross machine direction arrayed feed holes which form the flow channels and which communicate between said corresponding ~~at least one~~ feed chamber and [[the]] nozzle slot whereby the effective area of the feed holes is adjusted so that ~~the at least one~~ each layer of the coating material achieves the selected cross machine direction thickness profile ~~for said at least one coating material layer~~.

18. (currently amended) The method of claim 17, further comprising the step of: ~~wherein the coating material~~ flowing coating material between [[said]] ~~at least one~~ each feed chamber and [[the]] corresponding nozzle slot ~~flows~~ through at least one equalizing chamber, which extends in the cross machine direction and into which equalizing chamber the feed holes open.

19. (currently amended) A method of coating a paper/board web of a selected width with a plane-fed curtain coater, comprising a cross machine direction extending nozzle beam provided with at least a first feed chamber and a first nozzle feed slot connected to the first feed chamber, and a second feed chamber and a second nozzle feed slot connected to the second feed chamber, comprising the steps of:

feeding a first layer of first coating material from the first nozzle feed slot on top of a flow plane defined by the nozzle beam, and flowing the first layer in a machine direction along the flow plane to a feed lip;

feeding a second layer of second coating material from the second nozzle feed slot on top of the flow plane defined by the nozzle beam, and flowing the second layer in the machine direction along the flow plane over the first layer and to the feed lip;

determining a cross machine direction thickness profile of ~~at least one of~~ the first layer of coating material [[or]] and the second layer of coating material, on top of the flow plane downstream of the first nozzle feed slot, [[or]] and the second nozzle feed slot respectively;

trickling the plurality of superpositioned layers from the feeding lip of the nozzle beam in the form of a coating curtain onto the surface of the web; and

controlling a first feed rate of the first coating material from the first feed chamber to the first nozzle feed slot, on the basis of the determined cross machine direction thickness profile of the first layer of coating material [[or]] and controlling a second feed rate of the second coating material from the second feed chamber to the second nozzle feed slot, on the basis of the determined cross machine direction thickness profile of ~~respectively the first layer of coating material or~~ the second layer of coating material, to achieve a selected cross machine direction thickness profile for said ~~at least one of the~~ first layer of coating material [[or]] and the second layer of coating material.

20. (currently amended) The method of claim 19 wherein the step of controlling on the basis of the determined cross machine direction thickness profile of the first layer of coating material [[or]] and the second layer of coating material, further comprises increasing or decreasing a by-pass flow of the coating material through the first feed chamber [[or]] and the second feed chamber.

21. (currently amended) The method of claim 19 wherein the step of determining a cross machine direction thickness profile of ~~at least one of~~ the first layer of coating material [[or]] and the second layer of coating material is accomplished with at least one sensor making non-contact measurements of thickness.

22. (currently amended) The method of claim 21 wherein said at least one sensor is moved in a cross machine direction along the nozzle beam, such that the cross machine direction thickness profile is ~~conductible~~ conducted with said sensor essentially across the flow plane corresponding to the entire width of the web.

23. (currently amended) The method of claim 19, wherein the step of determining the cross machine direction thickness profile is accomplished by measuring a surface speed of the first layer of coating material [[or]] and the second layer of coating material, as it flows in the machine direction along the flow plane.

24–28. (canceled)